

## CLAIMS

17. (currently amended) A device comprising a cylindrical vertical reactor, having a bottom and a top, wherein the reactor comprises:

means for injecting gaseous reactants, said injection means is disposed at the bottom,

means for discharging gas, said discharging means is disposed at the top; and

a plurality of centrifugal turbines arranged along a vertical agitating shaft oriented on the central axis of said vertical reactor, whereby rotation of said agitating shaft draws reactants in said reactor to the vertical axis and projects them radially in a horizontal plane.

18. (previously presented) The device of claim 17, wherein the centrifugal turbines are arranged regularly along a single vertical shaft.

19. (previously presented) The device of claim 17, wherein the reactor further comprises counter-baffles.

20. (previously presented) The device of claim 17, wherein the reactor further comprises a heat exchanger.

21. (previously presented) The device of claim 17, wherein the height of the reactor is between about 1.5 and about 10 times the diameter of the reactor.

22. (previously presented) The device of claim 21, wherein the height of the reactor is between about 2 and 4 times the diameter.

23. (previously presented) The device of claim 17, wherein the turbines are radial.

24. (previously presented) The device of claim 17, wherein the turbines are flanged.

25. (previously presented) The device of claim 17, wherein the turbines have one or more central opening.

26. (previously presented) The device of claim 17, wherein the number of the turbines is between 2 and 20.

27. (previously presented) The device of claim 26, wherein the number of the turbines is between 3 and 8.

28. (previously presented) The device of claim 17, wherein the diameter of the turbines is between about 0.2 to about 0.5 times the diameter of the reactor.

29. (previously presented) The device of claim 17, wherein the diameter of the turbines is between about 0.07 to about 0.25 times the diameter of the reactor.

30. (previously presented) The device of claim 17, the turbines comprise vanes, which the vanes are arranged in helix, at an angle or in radial.

31-34. (canceled)

35. (previously presented) The device of claim 17, wherein the reactor comprises at least one filter.

36. (previously presented) The device of claim 35, wherein the filter is inside or outside the reactor.

37. (withdrawn)

38. (withdrawn)